

**WHAT IS CLAIMED IS:**

1. A manufacturing method of an SOI wafer, comprising the steps of:

bonding a wafer for active layer with a supporting wafer via an insulating film interposed therebetween to thereby form a bonded wafer; and then

reducing a film thickness in a part of said active layer wafer of said bonded wafer to thereby form an SOI layer for manufacturing said SOI wafer, wherein

said supporting wafer has an oxidation induced stacking fault (OSF) entirely across a surface thereof.

2. A manufacturing method of an SOI wafer in accordance with claim 1, in which said supporting wafer has a nitrogen concentration in a range of  $1 \times 10^{14}$  atoms/cm<sup>3</sup> to  $3 \times 10^{15}$  atoms/cm<sup>3</sup> and an oxygen concentration not lower than  $12 \times 10^{17}$  atoms/cm<sup>3</sup> (old ASTM).

3. A manufacturing method of an SOI wafer, comprising the steps of:

bonding a wafer for active layer with a supporting wafer via an insulating film interposed therebetween to thereby form a bonded wafer; and then

reducing a film thickness in a part of said active layer wafer of said bonded wafer to thereby form an SOI layer for manufacturing said SOI wafer, wherein

said supporting wafer has an oxygen concentration not lower than  $16 \times 10^{17}$  atoms/cm<sup>3</sup> (old ASTM).

4. A manufacturing method of an SOI wafer in accordance with claim 1, further comprising the steps of:

ion-implanting of hydrogen gas or a noble gas element to said active layer wafer to thereby form an ion-implanted layer in said active layer wafer;

subsequently bonding said active layer wafer and said supporting wafer together to thereby form a bonded wafer; and then

heat treating said bonded wafer to thereby induce cleavage in said bonded wafer at the site of said ion-implanted layer as an interface.

5. A manufacturing method of an SOI wafer in accordance with claim 2, further comprising the steps of:

ion-implanting of hydrogen gas or a noble gas element to said active layer wafer to thereby form an ion-implanted layer in said active layer wafer;

subsequently bonding said active layer wafer and said supporting wafer together to thereby form a bonded wafer; and then

heat treating said bonded wafer to thereby induce cleavage in said bonded wafer at the site of said ion-implanted layer as an interface.

6. A manufacturing method of an SOI wafer in accordance with claim 3, further comprising the steps of:

ion-implanting of hydrogen gas or a noble gas element to said active layer wafer to thereby form an ion-implanted layer in said active layer wafer;

subsequently bonding said active layer wafer and said supporting wafer together to thereby form a bonded wafer; and then

heat treating said bonded wafer to thereby induce cleavage in said bonded wafer at the site of said ion-implanted layer as an interface.

7. A manufacturing method of an SOI wafer in accordance with claim 1, in which a thickness of said SOI layer is thinner than  $0.10\mu\text{m}$ .

8. A manufacturing method of an SOI wafer in accordance with claim 2, in which a thickness of said SOI layer is thinner than  $0.10\mu\text{m}$ .

9. A manufacturing method of an SOI wafer in accordance with claim 3, in which a thickness of said SOI layer is thinner than  $0.10\mu\text{m}$ .

10. A manufacturing method of an SOI wafer in accordance with claim 4, in which a thickness of said SOI layer is thinner than  $0.10\mu\text{m}$ .

11. A manufacturing method of an SOI wafer in accordance with claim 5, in which a thickness of said SOI layer is thinner than  $0.10\mu\text{m}$ .

12. A manufacturing method of an SOI wafer in accordance with claim 6, in which a thickness of said SOI layer is thinner than  $0.10\mu\text{m}$ .

13. A manufacturing method of an SOI wafer in accordance with any one of claim 1 to 12, in which prior to said step of bonding, a rapid thermal process at a temperature in a range of  $1100^{\circ}\text{C}$  to  $1250^{\circ}\text{C}$  for five minutes or longer or a high-temperature heat treatment at a temperature in a range of  $1050^{\circ}\text{C}$  to  $1250^{\circ}\text{C}$  for one hour or longer is applied to said supporting wafer in a reducing gas atmosphere.

14. A manufacturing method of an SOI wafer, comprising the steps of:

bonding a wafer for active layer with a supporting wafer via an insulating film interposed therebetween to thereby form a bonded wafer; and then

reducing a film thickness in a part of said active layer wafer of said bonded wafer to thereby form an SOI layer for manufacturing

said SOI wafer, wherein

said supporting wafer that has been bonded has an oxidation induced stacking fault (OSF) entirely across a surface thereof, and  
a thickness of said SOI layer is thinner than  $0.10\mu\text{m}$ .

15. A manufacturing method of an SOI wafer in accordance with claim 14, in which said supporting wafer has a nitrogen concentration in a range of  $1 \times 10^{14}$  atoms/cm<sup>3</sup> to  $3 \times 10^{15}$  atoms/cm<sup>3</sup> and an oxygen concentration not lower than  $12 \times 10^{17}$  atoms/cm<sup>3</sup> (old ASTM).

16. An SOI wafer manufactured by a method comprising the steps of:

bonding a wafer for active layer with a supporting wafer via an insulating film interposed therebetween to thereby form a bonded wafer; and then

reducing a film thickness in a part of said active layer wafer of said bonded wafer to thereby form an SOI layer for manufacturing said SOI wafer, wherein

said supporting wafer that has been bonded has an oxygen concentration not lower than  $16 \times 10^{17}$  atoms/cm<sup>3</sup> (old ASTM), and  
a thickness of said SOI layer is thinner than  $0.10\mu\text{m}$ .